Waste Incineration & Public Health

Committee on Health Effects of Waste Incineration

Board on Environmental Studies and Toxicology

Commission on Life Sciences

National Research Council

National Academy Press, 2000

Selected quotes abstracted by R. A. Fleming, January 22, 2006

The Committee was established to assess relationships between human health and incineration of hazardous waste, municipal solid waste, and medical waste. The Committee took no position on the merits of incineration compared with other waste-management alternatives.

The report has an eleven page Executive Summary. Chapters typically end with conclusions, recommendations and sometimes summaries. I recommend that members of the Delaware Solid Waste Management Technical Working Group at an absolute minimum familiarize themselves with the Executive Summary.

Some members – like I – will be interested in additional material. For them I have copied selected comments from the 335 page book. I have selected quotations in order to provide readers some insight into the National Academy committee's perspective on items which I believe will be of particular interest to your Working Group.

Everything written below is a direct quote from the book, with page numbers shown in parenthesis.

- Government agencies should (make) readily available to the public, substantially more information on the following … Emission and process conditions during startup, shutdown, and upset conditions. (4)
- It is important to assess incinerator emissions in the context of the total ambient concentration of pollutants in an area. (5)
- Pollutants emitted by incinerators that appear to have the potential to cause the largest health effects are particulate matter, lead, mercury, and dioxins and furans (6)
- The process of public involvement should be open, inclusive, and substantive, and members of the public in an affected area should be involved early and often. (10)
- The people who might be exposed to the contaminants are likely to differ in their susceptibilities and activity patterns. (11)
- Large variabilities and uncertainties associated with risk-assessment predictions often limit the ability to define risks posed by incinerators. (11)
- Despite past efforts to characterize the potential health risks at numerous individual existing and proposed incineration sites, the committee has carried out this study with rather sparse information on the relationship between human exposure to pollutants released to the environment through waste incineration and the occurrence of health effects because such information is generally unknown. (15)

- Heavy metals are found in batteries, pigments, leather, solder, and cans; chlorine is contained in PVC plastics and some bleached paper; polystyrenes might contain chlorofluorocarbons; sulfur is in tires and gypsum wallboard; and nitrogen is in food and yard waste. [*footnote 3:* Metals may themselves be toxic, or may catalyze the production of toxic inorganic or organic trace compounds in flue gases, for example, toxic chlorinated compounds like the dioxins and furans. Sulfur in the input stream will produce sulfur oxides in the flue gases, and nitrogen compounds will produce nitrogen oxides. *End of footnote*.] (31)
- As discussed in Chapter 5, dioxins and furans are the most-hazardous organic PICs[1] that have been found in the flue gas of any combustion device. (54)
- Since 1994, it has been required that municipal-incinerator ash be tested to determine whether it is hazardous. If it is hazardous according to RCRA definitions, it must be disposed of as hazardous waste. (65)
- Studies at municipal solid-waste incinerators show that workers are at much higher risk for adverse health effects than individual residents in the surrounding area. (168)
- Pollutants produced and emitted by incinerators that currently appear to have the potential to cause the largest health effects are particulate matter, lead, mercury, and dioxins and furans. (179)
- On the basis of available data, a well-designed and properly operated incineration facility emits relatively small amounts of those pollutants, contributes little to ambient concentrations, and so is not expected to pose a substantial health risk. However, such assessments of risk under normal operating conditions may inadequately characterize the risks or lack of risks because of gaps in and limitations of existing data or techniques used to assess risk, the collective effects of multiple facilities not considered in plant-by-plant risk assessments, potential synergisms in the combined effects of the chemicals to which people are exposed, the possible effect of small increments in exposure on unusually susceptible people, and the potential effects of short-term emission increases due to off-normal operations. (179)
- A waste-incineration facility may provide jobs, both directly and by attracting industry to the region because of the services offered by the facility. (224)
- A waste facility may have an adverse effect on local economic prospects, however, if businesses leave the affected area or decide not to locate there. (224)
- A waste-incineration facility may affect local public finances favorably insofar as it adds to local tax revenues or decreases the cost of local-waste disposal. However, such a facility may affect public finances adversely insofar as it (224) increases the need for public services, such as improvements in roads and emergency preparedness, increases the cost of local-waste disposal, or requires large investments of time by local and state officials in permitting and other regulatory activities. (225)
- The American public has less and less trust in the institutions and people responsible for the siting and management of potentially hazardous facilities, such as incinerators (229)
- One of the first questions likely to be asked by people in the prospective host area of a waste-incineration facility (or other waste facility) is, “Is this really needed?” (Chertoff and Buxbaum 1986). If proponents cannot convincingly demonstrate a pressing need for a new or expanded incineration facility, people who are skeptical of the need for the

[1] PIC: products of incomplete combustion

facility, or are otherwise opposed to it, will be disinclined to negotiate on other issues about it. (229)

- As mentioned previously, members of the public are likely to ask why an incinerator is needed and why wastes can't be reduced by recycling, source reduction, and so on. (239)
- Siting a facility like a waste incinerator presents an inherent and inescapable need to address equity. Whatever site is chosen, the associated health risks, if any, and other effects are necessarily borne by relatively small groups, whereas the benefits of waste treatment or disposal (for example, jobs and substantial tax revenues) can accrue to a larger population. (243)
- The social, psychological, environmental, and economic effects of proposed and existing waste incineration facilities should be assessed, and mitigation of or compensation for such effects should be considered where appropriate. (244)
- Decisionmakers should coordinate with risk assessors in identifying the uncertainties and variabilities associated with estimating the health risks of waste incineration that are likely to have the greatest impact on the specific decision to be made. (260)